What is claimed is:

1.   An adaptive system modeling method comprising:

selecting from a plurality of candidate features of a system a set of input features and a superset of the input features and other features by using a baseline significance signature;

generating a system model by using data corresponding to the selected input features set;

maintaining online data corresponding to the superset of the input features and other features collected from the system;

determining a new significance signature of the system by using the online superset data to perform a discriminant analysis of the candidate features; and

detecting an evolutionary change in the system by comparing the new significance signature and the baseline significance signature.

2.   The method of claim 1 further comprising selecting new input features by using the new significance signature.

3.   An adaptive system modeling method comprising:

determining a baseline significance signature of current behavior of a system by performing a discriminant analysis;

selecting from a plurality of candidate features a set of input features and a superset of the input features and other features by using the baseline significance signature;

generating a system model by using data corresponding to the selected input features set; and

maintaining online data corresponding to the superset of the input features and other features collected from the

system.

4. The method of claim 3 further comprising:

evaluating an accuracy of predictions by the system

5 model based on additional input features data;

determining a new significance signature of the system
by performing another discriminant analysis of the
candidate features, if the accuracy of the system model
predictions is below a predetermined accuracy level; and

10   selecting new input features by using the new
significance signature.

5. The method of claim 4, wherein the additional
input features data is obtained from the online collection

15 of data.

6. An adaptive system modeling method comprising:

determining a baseline significance signature of
current behavior of a system by using a decision tree

20 methodology to perform a discriminant analysis;

selecting from a plurality of candidate features of a
system a set of input features by using the baseline
significance signature; and

generating a system model by using data corresponding

25 to the selected input features set.

7. A program storage device readable by a machine,
tangibly embodying a program of instructions executable by
the machine to perform the method of claim 1.

30

8. A program storage device readable by a machine,
tangibly embodying a program of instructions executable by
the machine to perform the method of claim 3.

9.   A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method of claim 6.

5

10.   A computer system, comprising:

a processor; and

a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform the method of claim 1.

11.   A computer system, comprising:

a processor; and

15   a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform the method of claim 3.

20   12.   A computer system, comprising:

a processor; and

a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform the method of claim 6.

25   6.

13.   A computer data signal embodied in a transmission medium which embodies instructions executable by a computer to perform the method of 1.

30

14.   A computer data signal embodied in a transmission medium which embodies instructions executable by a computer to perform the method of 3.

-51-

15. A computer data signal embodied in a transmission medium which embodies instructions executable by a computer to perform the method of 6.

5